APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/742,157	12/19/2000	Naoko Iwami	16869C-016600US	9696

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EXAMINER
ZHONG, CHAD

ART UNIT	PAPER NUMBER
2152	

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _04 January 2002_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-22_ is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-22_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
   application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-22 are presented for examination.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such
> that the subject matter as a whole would have been obvious at the time the invention was made to a person having
> ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in
> which the invention was made.

3.   Claims 1-12, 17-20 are rejected under 35 U.S.C. 103(a) as unpatentable over Eshel et al.

(hereinafter Eshel) in view of Gokulrangan, US 6,658,512.

4.   As per claim 1, Eshel teaches a computer system comprising:

a computational resource (Col. 7, lines 10-15);

a storage system (Fig 5A, 5B); and

a communication link connecting said computational resource and said storage

system; wherein said computational resource establishes communications with said storage

system using said communication link (Col. 6, lines 1-10); and

wherein said storage system allocates resources to said computational resource

based upon a data rate capability of said storage resources (Col. 1, lines 14-16; Col. 8, lines 60-67)

5.   Eshel does not explicitly teach resource allocation based on data rate capability of said

communication link, this is due to the fact that Eshel has the communications link that is large enough so

resource bottleneck is not an issue. However, in real network storage systems, resources such as

bandwidth of network and disk rates are finite values. As an illustrative example, if a plurality of disk

block storage system (560) are attached to High-Speed Data Interconnection System (570), eventually the finite bandwidth of 570 would be of concern, and the bandwidth allocated in the device must coincide with how much bandwidth the physical communications link is able to handle. In light of this information, examiner points to Gokulrangan.

6.   Gokulrangan's invention is in the realm of storage networks, further, Gokulrangan explicitly takes finite bandwidth of the communications link into consideration in the sample section of Col. 5, lines 17-67.

7.   It would have been obvious to one of ordinary skill in this art at the time of invention was made to combine the teaching of Eshel and Gokulrangan because they both dealing with storage networks and resource allocation. Furthermore, the teaching of Gokulrangan
resource allocation based on data rate capability of said communication link
would improve the latency and communication costs for Eshel's system by shortening the travel time of program data in between nodes while prioritizing traffic in a resource limited environment would further improve the efficiency of Eshel's system.

8.   As per claim 2, Eshel teaches the system of claim 1, wherein said computational resource is a host system (Col. 7, lines 10-15).

9.   As per claim 3, Eshel teaches the system of claim 1, wherein said computational resource is a second storage system (Col. 7, lines 3-8).

10.   As per claim 4, claim 4 is rejected for the same reasons as rejection to claim 1 above.

11.   As per claim 5, Eshel teaches the system of claim 4, wherein said communication link provides a guaranteed quality of service (QoS) communication (Col. 6, line 1; wherein as discussed previously in

claim 1, the link is always guaranteed to handle the flow of data).

12.   As per claim 6, Eshel does not explicitly teach the system of claim 5, wherein said guaranteed

quality of service (QoS) communication comprises a guaranteed data rate; and wherein said storage

system allocates storage resources based upon said guaranteed data rate.

13.   Gokulrangan teaches the above sections, for instance Col. 3, lines 3-15; Col. 4, lines 60-67; Col.

5, lines 15-35, wherein the finite resources on the communication link becomes a bottleneck for the end

devices and prioritization must be taken into consideration while allocating the resources.

14.   It would have been obvious to one of ordinary skill in this art at the time of invention was made

to combine the teaching of Eshel and Gokularangan because they both dealing with storage systems.

Furthermore, the teaching of Gokularangan to allow

wherein said guaranteed quality of service (QoS) communication comprises a guaranteed data rate; and

wherein said storage system allocates storage resources based upon said guaranteed data rate.

would improve the latency and communication costs for Eshel's system by shortening the travel time of

program data in between nodes while prioritizing traffic in a resource limited environment would further

improve the efficiency of Eshel's system.

15.   As per claim 7, claim 7 is rejected for the same reasons as rejection to claim 6 above.

16.   As per claim 8, claim 8 is rejected for the same reasons as rejection to claim 1 above. Further,

referring to Gokulrangan, Col. 5, lines 15-67, allocation of bandwidth of the communications link (path),

is dependent upon the finite bandwidth amount as well as the rate capability/demand of the end nodes.

17.   As per claim 9-11, claims 9-11 are rejected for the same reasons as rejection to claims 5-7 above

respectively.

18.   As per claim 12, Eshel teaches an apparatus comprising:

a processor (Col. 7, lines 10-15);

a storage (Fig 5A, 5B); and

a network connection, operable to connect said apparatus at a guaranteed

quality of service (QoS) (Col. 6, lines 1-4); and

wherein said processor establishes a data path between said storage and said

network connection (Col. 6, lines 1-10); said data path being assigned a sufficient data speed to

accommodate said guaranteed quality of service (Col. 6, lines 22-24; wherein the data path is always

sufficient in this case).

19.   As per claim 17, claim 17 is rejected for the same reasons as rejection to combination of claims 8

and 1 above.

20.   As per claim 18, claim 18 is rejected for the same reasons as rejection to combination of claims 5

and 6 above.

21.   As per claim 19, claim 19 is rejected for the same reasons as rejection to claim 7 above.

22.   As per claim 20, claim 20 is rejected for the same reasons as rejection to claim 1 above.

23.   As per claim 21, claim 21 is rejected for the same reasons as rejection to claim 1 above.

24.   As per claim 22, claim 22 is rejected for the same reasons as rejection to claim 1 above.

25.   Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eshel et al.

(hereinafter Eshel) in view of 'Official Notice'.

26.   As per claims 13-16, Eshel does not teach the network connection comprises of ATM, ISDN,

DSL and RSVP respectively. However 'Official Notice' it taken by the Examiner that these

communications protocols are notoriously well known for guarantee of QoS in a computer

communications network.   Hence, it would have been obvious to have used any of the above mentioned

communication protocol for the current invention, because doing so would be less burdening

for the individual units, through QoS enabled protocol for providing the QoS requirement, the storage

system would thereby accommodate to that requirement accordingly.

27.   Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eshel et al.

(hereinafter Eshel) in view of Wakamiya et al. (hereinafter Wakamiya), US 5,682,477.

28.   As per claim 21, Eshel does not teach the method of claim 17, wherein said allocating storage

comprises:

      searching for unallocated storage having a sufficient data capacity to match a data rate capability of

said network connection.

29.   Wakamiya teaches the method of claim 17, wherein said allocating storage comprises:

      searching for unallocated storage having a sufficient data capacity to match a data rate capability of

said network connection (Col. 1, lines 57-67; Col. 3, lines 21-30).

30.   It would have been obvious to one of ordinary skill in this art at the time of invention was made

to combine the teaching of Eshel and Wakamiya because they both dealing with magnetic disk

management and resource organization.   Furthermore, the teaching of Wakamiya to allow searching for

unallocated storage having a sufficient data capacity to match a data rate capability of

said network connection would improve the capability for Eshel's system by utilizing unallocated spaces

in a more efficient manner.

Conclusion

31.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents and publications are cited to further show the state of the art with respect to "guaranteed Data Access Speed for a Storage System".

> i.   US 6795865   Bahl et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chad Zhong whose telephone number is (703) 305-0718. The examiner can normally be reached on M-F 7am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John A Follansbee can be reached on 703-305-8498. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

CZ
October 1, 2004

Dung C. Dinn
Primary Examiner